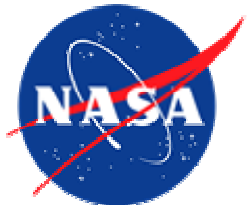
National Aeronautics and Space Administration



NASA ROBOTICS ACADEMY
PROFILE BOOK
2006

University Programs Office, Mail Code 602
NASA Goddard Space Flight Center
Greenbelt, MD 20771
http://university.gsfc.nasa.gov/robotics

2006 NASA ROBOTICS ACADEMY AT THE GODDARD SPACE FLIGHT CENTER

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University Programs Office, Code 602

Table of Contents

Program Description

The NASA Robotics Academy is an intensive resident summer program of higher learning for college undergraduate and graduate students interested in pursuing professional and leadership careers in robotics-related fields.

The NASA Robotics Academy program is designed to present a comprehensive package of information and experiences about the organization of the NASA Agency, some of its most important current and planned science, engineering, education, and technology enterprises, as well as a number of non-technical areas of critical significance. Besides attending lectures and workshops with experts in their field, the Robotics Academy students are involved in supervised research in GSFC laboratories, private companies, and universities, and will participate in visits to other NASA Centers, the Applied Physics Laboratory, the Massachusetts Institute of Technology (MIT) and a number of robotics-related academic laboratories and industries.

Eligibility, Selection Criteria, and Placement

The 29 participants in the 2006 NASA Goddard Robotics Academy have been selected from a pool of about 200 applicants representing 128 institutions, 38 states in the continental USA, Puerto Rico, Bangladesh, and Qatar. Selection was based following criteria:

- academic rank
- academic performance (GPA higher than 3.0 or equivalent)
- demonstrated interest in robotics
- demonstrated leadership qualities
- research and/or project interest and experience
- maturity
- recommendation and references
- citizenship or permanent residence is required for US applicants

Both the selection process and placement of the Robotics Academy participants in Goddard's research groups were assisted by recommendations from faculty, administrators, academic supervisors, and co-workers, and the applicants' self-profiling essays.

Team Projects

Team 1:

Development of Robotic Servicing Technology

Principal Investigator: Richard Fink, Code 442

Abstract:

Unmanned robotic servicing of the Hubble Space Telescope has become a recent topic of interest at NASA Goddard. Student researchers will take part in research and development related to the Hubble Space Telescope (HST) robotic servicing mission. The first task will be the evaluation of the mechanical properties and functionality of a Dexterous Manipulator end-effector commonly referred to as an ORU Tool Change-Out Mechanism (OTCM). The next task will be the development of a simulator for determining the force contact dynamics and compliance of the robotic servicing platform using a Fanuc 430iF industrial robot. These tasks will necessitate the creation of a robotic test bed and an evaluation of the end-effector/OTCM. In addition, research will be conducted on force/moment sensors and their use in compliance applications. Modeling software (e.g. IGRIP) and systems engineering tools (e.g. CORE) will be used to design the industrial robot workspace. Research on prior projects in compliance with robotic arms will be conducted and applied to an existing controller interface formerly used for a similar project. Software will be written in C++ using Qt, a cross-platform Graphical User Interface (GUI) tool.

Team Lead: Kristina Rohlin

Research Associates: Alexander May
Kevin Reilly
Jeremy Swindell

Team 2:

Motion Planning in Unstructured Environments

Principal Investigator: Vladimir Lumelsky, Code 588

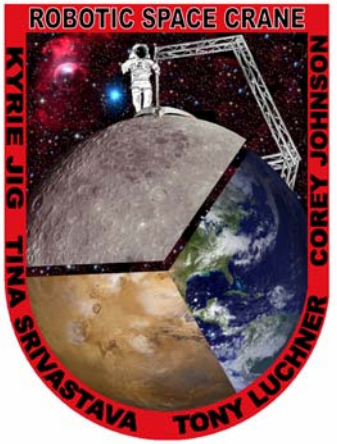
Abstract:

Robotic missions will be used to pave the way for future manned Mars exploration. Time delays in communication links between Earth and Mars require that all robots be autonomous. Further constraints, such as system complexity, cost, and electrical power, suggest the use of minimal sensing and distributed control. In addition to stationary obstacles such as equipment and terrain, collisions between robots are a concern in a crowded construction site. Bug algorithms have been demonstrated to be successful for single-robot navigation with minimal sensing but have not been explored in the context of multiple decentralized robots. Conventional Bug algorithms will be adapted to provide motion control in environments with stationary and moving obstacles.

Team Lead: Joseph Gland

Research Associates: Matthew Faulkner
Tanya Klinkhachorn
Kevin Luu

Team 3:



Human-Robot Cooperation Robotic Space Crane

Principal Investigator: Dave Akin, Space Systems Lab, UMD

Abstract:

For centuries, construction of large structures has required cranes. Construction of Moon or Mars based structures will most likely not be any different. This year the UMD team will be designing and building a full scale crane that can lift 200lbs and has a reach of 15ft. Also, the crane must be light and compact for easy space transport and must deploy without human intervention. It might also be feasible for the crane to serve in other capacities such as on a astronaut transport rover, or an orbiting station.

Team Lead: Corey Johnson

Research Associates: Kyrie Jig
Anthony Luchner
Tina Srivastava

Team 4:

Cooperative Team-diagnosis in Multi-robot Systems

Principal Investigator: Mehran Armand, Applied Physics Lab

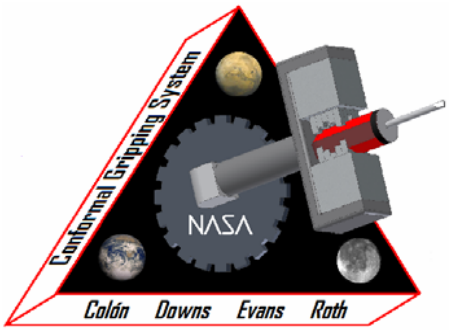
Abstract:

The need for state-of-the-art research in self-diagnosing and repairing machines is becoming more crucial in a range of systems for which a-priori, or in-situ, repair/diagnosis by a human operator is not feasible within an appropriate time frame. Interplanetary spacecraft, underwater vehicles, and smart buildings are just a few examples of systems that can benefit from the behavioral flexibility offered by self-diagnosis and repair. For this project, Students will design and develop a test platform for performing cooperative team diagnosis in a multi-robot system. The test platform will consist of four Lego robots. Each robot can be disassembled to subsystems (e.g. left wheel assembly, right wheel assembly, microprocessor unit, manipulator, and end effectors) by other robots. The students will then develop and implement test routines to demonstrate how these robots can work together to diagnose a defect in other robots' subsystems.

Team Lead: Ellie Lin

Research Associates: Elan Hourticolon-Retzler
Anahita Karimi
Bradley Smith

Team 5:



Conformal Gripping System for Space Robots

Principal Investigator: John Vranish, Code 695

Abstract:

Conformal Gripping provides a revolutionary advance in space robot tool handling beyond present state-of-the-art swapping out of end-effectors. The general principle of conformal gripping has been proven out and we are now moving to make conformal gripping so compac, strong, effective and inexpensive that it becomes the dominant means for robotic tool and materials handling both in space and on earth. The project is multi-disciplinary (mechanics, electrical power and sensing, controls, kinematics, systems engineering and computer simulation and computer extra-sensory visualization).

Team Lead: Gabriel O. Colón

Research Associates: Matthew Downs
Tyler Evans
Stephanie Roth

Team 6:

Advanced Interface Technology

Principal Investigator: Corinna Lathan, AnthroTronix

Abstract:

AnthroTronix's core technology is advanced interface technology for wearable computers and robotic control systems. AnthroTronix has developed CosmoBot™: a robotic toolkit designed to assist the social development and special education of children with Autism Spectrum Disorder (ASD). Through a therapist module on the computer, a therapist or special education teacher is able to both control CosmoBot™ and monitor the activity of the child.

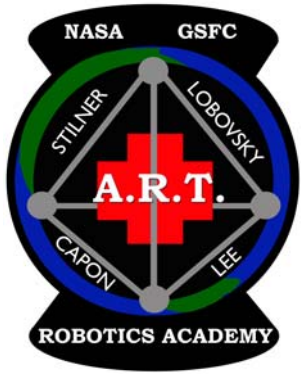
Because of the importance of early intervention in treatment of ASD, there is a need for therapy methods that can both engage young children and help their social development. AnthroTronix is now working on the development of six modules that use CosmoBot™ to help develop specific skills in young children. The hope is that these will further assist therapists, and provide a starting point for other activities. The NASA internship project will focus on implementing these modules.

Also, research will go into learning how existing voice recognition implementations work and how they may be improved to work with children. Most commercial options work well for adults, but poorly with young children. As a result, the possibility of building a specialized voice recognition engine designed specifically for children will be explored. Such a system can be implemented in CosmoBot™ to allow a child to control the robot using speech activation.

Team Lead: Nadia Cheng

Research Associates: Ian Ferguson
Ceryen Tan
Fiona Turett

Team 7:



Autonomously Reconfigurable Technology

Principal Investigator: Cynthia Cheung, Code 695

Abstract:

Tetrahedral robotic structures are a revolutionary concept in mobile robotics. By combining many active linear-motion strut elements, structures can be created with the ability to "morph" and alter the structure's geometry in a controlled manner. This allows rovers to achieve locomotion without wheels, and by conforming to the local terrain they can traverse many different types of terrain. Rovers employing this technique are extremely versatile, but with so many mechanical elements it is likely that one or more struts will fail. The fundamental modularity of the tetrahedral architecture lends itself to a reconfigurable system, where a rover can replace failed struts or change its overall geometry to better complete its mission. The primary objective of our team is to develop a prototype system that allows a strut or group of struts to remotely locate and connect to another strut, setting the stage for a completely reconfigurable structure.

Team Lead: Larry "Justin" Stiltner

Research Associates: Thomas Capon
Tiffany Lee
Maxim Lobovsky

Project 8:

Morgan State University

Summer Institute of Robotics

Principal Investigator: Clifton Martin, Morgan State University

Abstract:

The 2006 Summer Institute for Robotics (SIR) at Morgan State University (MSU) School of Engineering is designed to increase the knowledge and understanding of the concepts and principles of robotics for urban high school students with an interest in careers in science, technology, engineering, and mathematics (STEM). SIR plans to achieve the following objectives:

- To inspire and develop future robotics specialists
- To cultivate and sustain interest in STEM fields and address the gap in the pipeline at the college freshman and sophomore level
- To promote alliances with academic institutions, government agencies, and industry partners.

In this program, high school students will be introduced to robotics, mechanical platforms: design and physical properties, microcontroller systems, basic C programming, and presentation/public speaking etiquette. MSU School of Engineering will develop and coordinate this program. More specifically, the program will be operated jointly by the Departments of Electrical & Computer Engineering and the Department of Industrial Engineering at MSU. SIR will develop relationships between MSU, NASA Goddard, and FIRST. This SIR program will be particularly useful in preparing participants for entry or leadership within the FIRST robotics program. This will help expand and diversify the FIRST competition. Students in this program will also be prepared to take advantage of internship possibilities that NASA Goddard offers in the area of robotics. Students will have exposure to robotics and be great applicants for future programs provided by NASA at higher levels.

Team Lead: Seon Reis

Thomas Capon

University of Maryland, College Park
College Park, MD
Electrical Engineering and Physics
Bachelor of Science, May 2009
Email: robot256@gmail.com

Robotics Academy Research Project:
Autonomously Reconfigurable Technology,
Research Associate
Principal Investigator: Cynthia Cheung, Code 695

Research and Work Experience

- ***NASA Goddard Space Flight Center, Student Intern – Greenbelt, MD, August 2005 – June 2006***
  Tetrahedral walker project: assist in design, fabrication, testing, firmware development, and mechanical integration for an experimental robot.
- ***NASA Goddard Space Flight Center, National Space Club Scholar – June - August 2005***
  Tetrahedral walker project: assembly of conceptual modeling, assist assembly of experimental robot

Special Skills

- Hardware assembly and maintenance
- Network cabling and configuration
- Autodesk AutoCAD 2004
- Cadsoft EAGLE
- C
- C++
- Visual Basic
- Assembler for Microchip PIC microcontrollers
- Basic analog electronics design and analysis
- Electrical and electronics soldering
- Digital electronics design and analysis
- Microcontroller programming, integration, and troubleshooting

Honors and Awards

- Semester Academic Honors (Dean's List), January 2005

- University of Maryland, Dept. of Electrical Engineering Departmental Honors Program, 2005-2009
- Inventis Academy of Engineering Scholars, 2005 – 2009
- Dean's Scholarship, 2005 – 2009
- A. James Clark School of Engineering Scholarship, 2005-2009
- "Best Use of Technology" Judge's Choice Award, Botball 2004
- AP Scholar with Distinction Award, 2004, 2005
- Maryland Distinguished Scholars Program, Honorable Mention, 2004

Hobbies and Interests

Electronics, mobile autonomous robotics, computer maintenance and networking, machining and mechanical design, playing trumpet, and theoretical physics.

Personal Statement

"I have always loved to build things. To me, engineering isn't so much an vocation as a way of life. With robotics, I am able to bring together my diverse interests in electrical, mechanical, and software engineering to produce creative and innovative results. I love collaborating in a team of competent engineers, and working with my fellow Robotics Academy members has been both productive and enjoyable.

Working in the space program at NASA allows me to interact with some of the greatest minds in the world, and gives me countless opportunities to apply my creativity and problem-solving skills to real-world situations. I hope to continue working at NASA for many years and perhaps assist in the first manned mission to Mars."

Nadia Cheng

University of California, San Diego
La Jolla, CA
Mechanical and Aerospace Engineering
Bachelor of Science, June 2007
Email: nadia.cheng@gmail.com

Robotics Academy Research Project:

Advanced Interface Technology, Team Lead
Principal Investigator: Corinna Lathan at AnthroTronix

Publications

- Grabbe, S.R., B. Sridhar, P. Kopardekar, N.G. Cheng, ***"Central East Pacific Flight Routing,"*** submitted for presentation at the AIAA Navigation, Guidance, and Control Conference, Keystone, CO, August 21-24, 2006.

Research and Work Experience

- ***NASA Ames Research Center, Educational Associate, Aviation Systems Division, Summer 2005***
  Used FACET, "Future ATM Concept Evaluation Tool", an air-traffic simulator, to study wind-optimal routing for oceanic flights between Hawaii and North America.
- ***Optimal Synthesis Inc, Palo Alto, CA – Student Intern, Summer 2004***
  Researched aerospace/defense technologies for proposal preparation and developed promotion animation for a NASA-funded research program in airport surface traffic automation.
- ***Highlands Recreational Center, San Mateo, CA – Day Camp Counselor, Summers 2001, 2002, 2003***
- ***Peninsula Ballet Theatre, CA – Professional Demi-Soloist Ballet Dancer, 1998 - 2001***

Memberships and Activities

- Tau Beta Pi
  - '06 – '07 President
  - '05 – '06 TBP Academic Committee: Mechanical and Aerospace Engineering Representative
- Undergraduate Student Advisory Committee for Mechanical and Aerospace Engineering
- American Institute of Aeronautics and Astronautics (AIAA)

- 2006 Sally Ride Science TOYchallenge
  - Planning committee for prescreening judging for national toy design competition for 5th – 8th graders
  - Judge at final competition
- 2005-2006 UCSD International House Yearbook
- UCSD International House Conversation Table Hostess: Cantonese
- Golden Key Society – Mentor to underprivileged youths
- Member of Society of Women Engineers, UCSD chapter – Mentor to young girls
- 2004 UCSD Sixth College student representative, Express to Success advisory board

Skills and Certifications

- Computer Skills: MATLAB, Adobe: Photoshop and InDesign, Macromedia: Dreamweaver, Flash, and Fireworks, MS Office, Autodesk AutoCAD and Inventor, LabVIEW
- Bilingual in Chinese (Cantonese) and English
- Working knowledge of C programming, nawk scripting, UNIX

Honors and Awards

- 2006 AIAA Reuben H. Fleet Scholarship
- Sigma Gamma Tau, Aerospace Engineering Honor Society
- Tau Beta Pi, National Engineering Honor Society
- Golden Key International Honour Society
- Provost's Honors, every quarter (Fall 2003-2006)
- 2003 Society of Women Engineers Golden Gate Section Scholarship

Hobbies and Interests

Robotics, classical Ballet (17+ years), tap dance, arts and crafts, reading

Personal Statement

"I intend to pursue graduate studies to increase my knowledge and understanding of engineering principles, especially in the area of mechanics and automation. Like many NASA interns, I also aspire to join the Astronaut Corp."

Gabriel O. Colón

University of Puerto Rico, Mayaguez
Mayaguez, PR
Electrical Engineering
Bachelor of Science, 2005
Email: gabr_col@yahoo.com

Robotics Academy Research Project:
Conformal Gripping System for Space Robots, Team Lead
Principal Investigator: John Vranish, Code 695

Publications

- Colón, Gabriel O., Brian C. Ward and Thomas J. Webster, "Nanophase ZnO for Orthopedic and Dental Implants", presented at Annual Biomedical Engineering Society Conference, Hyatt Regency at Baltimore, MD, September 28, 2005 to October 1, 2005.
- Cameron, C.B.; Rodriguez, R.N.; Padgett, N.; Waluschka, E.; Kizhner, S.; Colón, G.; Weeks, C. "Fast Optical Ray Tracing Using Multiple DSPs." IEEE Transactions on Instrumentation and Measurement, Vol. 55, Issue 3, Page(s): 801- 808, Digital Object Identifier 10.1109/TIM.2006.873813

Work and Research Experience

- ***University of Puerto Rico, Mayaguez, Automation and Robotics Final Project, 2005***
  Worked on "Express Check-In for Hotels", an automated receptionist system to attend the front desk of a hotel. The system includes: a robotic arm (6 degrees of freedom), C language interface, barcode detector, automatic controller, optical sensor, led display, and buzzer.
- ***Purdue University, Weldon School of Biomedical Engineering, Research Experience for Undergraduates – West Lafayette, Indiana, Summer 2005***
  Nanophase ZnO for Orthopedic and Dental Implants: Attempted to enhance osseointegration, the bonding of orthopedic implants to juxtaposed bone, using nanophase ZnO as a biocompatible material. (Made presentation at annual BMES conference, 09/30/05)
- ***Johns Hopkins University, Applied Physics Laboratory, Power Projection Systems Dept, Electrical Engineer – Laurel, Maryland, Summer 2004***
  The "Single Vehicle Roadway Departure Crash Warning Program" gives the driver a signal if he or she is driving too fast to take a curve. It detects when the car is driving out of the road or lane. I created part of the graphical user interface and analyzed data making algorithms in Matlab using vectorization and matrix mathematics.

- ***NASA Goddard Space Flight Center, SIECA Program Research Assistant – Greenbelt, MD, Summer 2003***
  Fast Optical Ray Tracing Using Multiple DSPs: optical ray tracing program simulates the Moderate-Resolution Imaging Spectroradiometer (MODIS) system which transmits rays from the sun. I created the focal plane detector, part of attenuator, and 3D mathematic vectorization analysis to make the program very fast using multiple DSP chips.
- ***University of Puerto Rico, Mayaguez PaSCoR Researcher – Mayaguez, Puerto Rico, August 2002 to December 2003***
  Remote Sensing and Geographical Information: Determined differences in reflectance of vegetation using remote sensing of metal enriched areas. Studied the effect of natural copper contamination on the reflectance spectra of leaves using a spectroradiometer.

Memberships and Activities

- Biomedical Engineering Society (BMES): Presented research investigation at 2005 annual conference
- Golden Key Honor Society: vice president, 2003-2004
- IEEE, student chapter
- Solar Decathlon Team

Skills and Certifications

- Bilingual: English and Spanish
- Automatization and Robotics: Programmable Logic Circuits (PLC), Root Locus, Constructor and Promodel
- Programming: MatLab, Simulink, Assembly (Pentium 4), LabView, C
- Windows operating systems, 95/98 & XP

Honors and Awards

- Dean's List
- Graduated Magna Cum Laude in Electrical Engineering
- United States Achievement Academy Award
- All-American Scholar Collegiate Award

Hobbies and Interests

Basketball, bowling, paintball, going to the beach, watching movies.

Personal Statement

"I have always been interested in studying something to improve people's quality of life. Since I was a young man I have been fascinated by many aspects of science, especially the ones related with medicine and math. This is the reason why I studied electrical engineering as a bachelor degree and will continue a PhD in biomedical engineering. As an electrical engineer I enjoy working with control systems and robotics, because they have multiple applications in our every day life. For me researching and developing new techniques to improve all aspects of engineering drives me to the edge of dedication and perseverance. "

Matthew Downs

University of Florida
Gainesville, Florida
Electrical Engineering
Bachelor of Science, April 2010
Email: thegreatestkahn@gmail.com

Robotics Academy Research Project:
Conformal Gripping System for Space Robots
Principal Investigator: John Vranish, Code 695

Research and Work Experience

- ***Downs' Detailing, Owner – Palm City, FL, July 2003 to Present***
  Owned and operated vehicle detailing and house maintenance business
- ***Awareness Technologies, Intern – Summer 2005***
  Worked in the fabrication dept. manufacturing parts for blood testing equipment. Quality Control-Inspected outbound components in the paint shop

Memberships and Activities

- ASME, 2005 to present
- S.P.A.M. Robotics Team 180: 2002 to present
  - Mentor, 2005 to present
  - Co-Captain, 2004-2005
  - Competition driver, 2003-2005
  - Mechanical division team leader, 2003-2004
  - FIRST lego league Mentor, 2004-2005
- Boy Scouts of America, 1998-2005
  - Junior Assistant Scoutmaster, 2002-2004
  - Senior Patrol Leader, 2001 to 2002
  - Asst. Senior Patrol Leader, 2000-2001
  - Chaplain, 1999-2000
  - Order of the Arrow, 2002-2005
- Youth Group Pianist, 1999-present
- Humane Society of the Treasure Coast Volunteer
- Environmental Studies Center Volunteer

Skills and Certifications

- Microsoft Office
- HTML
- C++
- Leadership

Honors and Awards

- Eagle Scout
- Young American's Award
- Who's Who Among American High School students
- Order of the Arrow

Hobbies and Interests

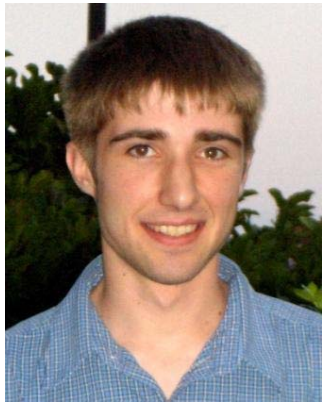
Writing, reading, biking, hiking, robotics, nanotechnology

Personal Statement

"I have always been curious about how mechanisms function, and have a keen eye for details. Learning about my high school robotics team, I immediately joined and soon it became my life. Giving school and robotics 110%, acheiving a 4.0 GPA my senior year while being robotics team captain and competition driver, and taking all AP/honors classes. Working extensively with the mechanical and electrical design and manufacturing of the robot has been a dream come true.

My creative side extends past robots to my piano playing and business. In high school I earned money designing duct tape wallets, backpacks and roses for Valentine's Day. I have been fortunate to travel throughout the United States, Canada and central Europe, helping me develop an appreciation for individuals with different cultural beliefs and traditions. As a University of Florida freshman my classes include second year calculus, chemistry, physics, C++ programming, and technical writing. "

Tyler Evans



Purdue University, West Lafayette
West Lafayette, IN
Mechanical Engineering
Bachelor of Science, 2008
Email: tcevans@purdue.edu

Robotics Academy Research Project:

Conformal Gripping System for Space Robots, Research Associate
John Vranish, Code 695

Research and Work Experience

- ***Kenworth Truck Company, Design Engineer Intern – Kirkland, WA Summer 2005***
  Worked as a main contact for suppliers to change current drawings to meet new standards; researched parts and assemblies to maintain functionality of updated drawings; updated drawings on original vellum and used Pro/ENGINEER.
- ***Confetti Junction, Balloon Expert/Cashier - Redmond, WA, May 2002 – August 2004***

Memberships and Activities

- Technical Coordinator and college mentor for FIRST team 1646
- Purdue Fall Space Day Activity volunteer
- Seattle Robotics Society Member
- Freshmen Honors Residential Learning Community
- "Purdue Underground" Ultimate Frisbee team
  - Pacific Northwest Ultimate Frisbee High School Champions 2003
  - Ultimate Frisbee High School State Runner-up 2004
- Flag Football

Special Skills

- Pro/ENGINEER
- Catia
- Solidworks
- Autodesk Inventor
- C
- Fortran
- MATLAB

- BrickOS
- Machine skills: lathe, drill press, mill

Honors and Awards

- Deans List, December 2004
- Semester with Honors, December 2004
- Purdue Valedictorian Scholarship
- PACCAR Paul Piggot Scholarship

Hobbies and Interests

- FIRST Robotics Volunteer
- Ultimate Frisbee
- Flag Football
- Intramural Sports

Personal Statement

"I found my passion for robotics early in high school. I played around with Lego Mindstorms, and even competed in a robot mini-sumo competition. Then, by starting a FIRST team at my high school, I found out firsthand how much I liked designing and building robots and working in an engineering environment. I decided to make that my career path, and plan to work with robotics for the rest of my life. This summer opportunity at NASA has really opened my eyes to a lot of specific possibilities for my future career. When I'm not thinking about robots, I enjoy having fun with friends and family, and enjoy playing Ultimate Frisbee. I'm originally from Seattle, but am currently at Purdue University going into my junior year in Mechanical Engineering. I hope to make a difference in the world through robotics, and am eager to see what the future holds."

Massachusetts Institute of Technology
Cambridge, Massachusetts
Electrical Engineering and Computer Science
Bachelor of Science, May 2008
Email: mfaulk@mit.edu

Robotics Academy Research Project:
Motion Planning in Unstructured Environments, Research Associate
Principal Investigator: Vladimir Lumelsky, Code 588

Research and Work Experience

- ***Mobile Autonomous Systems Laboratory (MASLab) – MIT- January 2006***
  Month-long team competition to build autonomous, vision-based robots. Requires programming of robots in java, assembly of chassis and manipulator. Robots perform object recognition, bar-code reading, navigation, and mapping.
- ***Lab Assistant "Robotics: Systems and Science II" – MIT – Fall 2005***
  Duties included construction of mechanical components of the class robots such as machining aluminum manpulator arms, wheel hubs, and circuit board enclosures; helping students select sensors and materials for the robots; production of new circuit boards for fall 2006 (ordering components, getting PCBs fabricated and assembled, etc.)
- ***Undergraduate Research Opportunities Program (UROP) Research Assistant - MIT Computer Science & Artificial Intelligence Lab – Summer 2005***
  Research and Preparation for Robotics: Systems and Science I. Duties included prototype work for the robotic platform used in R:SSII (a second semester continuation of R:SSI), organization of lab space and materials, creation of a class web page, clarifying lab instructions for R:SSI. Use of Linux, subversion control, java code.
- ***Palo Alto Research Center – Apprentice in Modular Robotics – August 2002***
  Apprenticeship entailed exploration of complex robotic behavior through simple, identical modular robotic units. Quick introduction to java, use of 3D printer, machining components for Polybot G3. The program provided exposure to robotics research in a professional laboratory, and included visits to other robotics labs.

Skills

- Java
- Scheme
- Linux
- General machining
- Circuit board assembly
- Familiarity with circuitry, actuators, sensors

Honors and Awards

- Gordon Smith Electrical Engineering Scholarship (MIT), 2004-2006
- National Merit Scholar

Hobbies and Interests

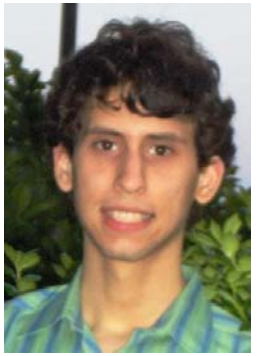
Classical guitar, art (sculptures, murals)

Personal Statement

"I am currently an undergrad at MIT studying Electrical Engineering and Computer Science. Prior, I was valedictorian of my high school. Perhaps one of my most prominent characteristics is the enthusiasm with which I have pursued my hobbies and projects. I derive great pleasure from building and designing things - from humble projects fixing toasters for neighbors to hammer and anvil iron-working and robot building. I enjoy using my hands and mind.

Besides projects, other interests have included public speaking and political debate. I'm afraid that schoolwork keeps me too busy to stay as up to date with politics as I would like, but I have come away from my debate experiences with confidence and the ability to communicate well and work as a member or leader of a team."

Ian Ferguson



Princeton University
Princeton, NJ
Mechanical Engineering
Bachelor of Science expected 2009
Email: Ianworld@gmail.com

Robotics Academy Research Project:

Advanced Interface Technology,
Research Associate
Principal Investigator: Corinna Lathan at AnthroTronix

Research and Work Experience

- ***Cox & Company, Summer Intern – New York, NY, Summer 2004***
  Aerospace Engineering firm. Designed and worked on researching the feasibility of a low power deicing system for aircraft leading edges. Developed proposal that was accepted for a NASA SBIR research grant.
- ***Twin Techies, Founder – New York, NY, Summer 2005***
  Founded computer repair and tech support company with twin brother. Traveled around the city fixing computers and solving technical problems.

Memberships and Activities

- Princeton Marching Band
- PAVE team member (Formerly DARPA Princeton Grand Challenge Team)
- FIRST Robotics team mentor

Technical Skills

- Java
- C
- Graphic Design
- Autodesk Inventor
- Adobe Photoshop
- Illustrator and Premier
- Macromedia Dreamweaver
- Microsoft Office Suite

Hobbies and Interests

- Graphic Design
- Music – collecting, playing, making, enjoying

- Robotics
- Classic Films and Asian Cinema
- Computers and everything related

Personal Statement

"Creation is my passion. I love to create whenever I can. This drive to create is what led me to engineering and beyond. In high school I found an outlet in FIRST robotics where I could build stunningly complex robots and design complex mechanical systems. I love a hard problem and FIRST gave me a chance to tackle an endless stream. I still help my high school team, working with my dad as a mentor and instilling in new members a passion for engineering.

My love for FIRST is partly because it led me to pursue numerous other creative activities. I was given an opportunity to produce videos and design t-shirts, logos and marketing materials. I now regularly find myself picking up the pencil or Wacom to make drawings and designs. I hope that I can bring a fun creative energy to my team and help produce a wonderful product."

Joseph Gland

University of Maryland
College Park, Maryland
Aerospace Engineering
Candidate for PhD, 2011
Email: glandjm@gmail.com

Robotics Academy Research Project:

Motion Planning in Unstructured Environments,
Team Lead
Principal Investigator: Vladimir Lumelsky

Academic Experience

- ***University of Maryland, College Park – College Park, MD, 2006 – 2011***
  Candidate for Ph.D. in Aerospace Engineering, concentration in Space Systems and Flight Control
- ***Rose-Hulman Institute of Technology – Terre Haute, IN, 2002 – 2006***
  Double major in Mechanical Engineering and Electrical Engineering, Magna Cum Laude

Work Experience

- ***MIT Lincoln Lab, Engineering Assistant – Cambridge, MA, Summer 2005***
  Designed, fabricated, and tested analog/digital control and Ethernet communication circuit board with unusual requirements from scratch; Developed novel particle counting and sizing sensor from conceptual design to working prototype for deployment in biological building defense architecture, used in DARPA field test; Assisted in algorithm development and design for sensor discrimination capability.
- ***Texas A&M University, Lab Assistant – College Station, TX, Summer 2004***
  Independent research project from brainstorm to completion of sensor for 6 degree of freedom magnetic levitation system that determines the position of magnetic levitation stage via feedback in actuator coils.
- ***University of Michigan, Lab Technician – Ann Arbor, Michigan, Summer 2003***
  Repaired/rebuilt custom mass spectroscopy digital/analog interface equipment for Temperature Programmed Analysis of Adsorption/Desorption reactions in ultra high vacuum systems. Maintained, repaired, and replace thermocouple gauges, mass

spectrometers, and pump system controllers for six different vacuum systems.

Memberships and Activities

- Delta Sigma Phi (social fraternity)
  - Treasurer (2 years)
  - Tutor (3 years)
  - Greek of the Year
  - Sphinx Award
- Tau Beta Pi (academic honor fraternity)
- Pi Tau Sigma (mechanical engineering honor fraternity)

Skills and Certifications

- Experience with Analog Electronics, PIC MCUs, FPGAs, Magnetic Motion Platforms, Optics, Lasers
- Programming Experience in C, PIC C Lite, Java, Verilog, Visual Basic, G & N Code, and HTML
- Experience with MATLAB, Solid Edge, SolidWorks, dSPACE, DxDesigner, and OrCAD Cadence
- CNC mill and lathe experience, Machine Shop Certified, working on Journeyman Electrician Certificate
- Budgeting, Financial Management, Teamwork Skills from Treasurer Position in Fraternity

Honors and Awards

- Greek of the Year
- Sphinx Award
- Distinguished Teaching Assistantship, University of Maryland
- Rose-Hulman Goldwater Scholarship Nominee 2005
- Dean's List

Hobbies and Interests

Robotics, SCUBA diving, drums, guitar.

Personal Statement

"I have a strong passion for robotics. I earned a degree in Mechanical and Electrical Engineering because I enjoy both topics. Next year I will begin work on a PhD in Aerospace Engineering at the University of Maryland where I will study Space Systems and Autonomous Flight Control. My career aspirations are to either work for a defense contractor in robotics navigation and controls or to end up as a professor where I can study robotics."

Elan Hourticolon-Retzler

Johns Hopkins University
Baltimore, Maryland
Physics
Bachelor of Science, June 2010
Email: ehourti1@jhu.edu

Robotics Academy Research Project:
Cooperative Team-Diagnosis in Multi-Robot Systems, Research Associate
Principal Investigator: Mehran Armand, APL

Memberships and Activities

- FIRST Robotics Team 007, 2002-2006
  - Electronics Lead, 2005
  - Programming Assistant Head, 2004
- Academic Team, Knowledge Master competitions, 2004-2006
- Chess Club, 2004-2006
- History Club, 2004-2006, President
- Knights Players, 2003-2006, stage crew
- Cross country, Track, Badminton
- Kids Helping Hopkins, 2004-2005
- Princeton Model Congress, 2004-2005
- Student Council Association, 2002-2006
- Baltimore County Student Councils, 2002-2006
- Maryland Association of Student Councils, 2004-2006
- Math Honor Society, 2003-2006
- German Honor Society, 2003-2006, vice-president
- Future Business Leaders of America, 2002-2006

Skills and Certifications

- Microsoft Office
- Open Office
- AutoCAD/Autodesk
- 3D Studio Max
- Photoshop
- Java
- C/C++
- Python
- Cryptol

Honors and Awards

- Honor Roll, every quarter
- AP Scholar with Honors
- Semifinalist in Baltimore County German Poetry reading, 2005
- Parkville Science Fair, 2002-2006

Hobbies and Interests

Playing guitar, working with legos, running, narrating movies, building model rockets

Personal Statement

"In elementary school I had the chance to get a tour around Goddard from my Grandfather who worked there. During the trip I got the chance to see several projects in development. Ever since then I've wanted to be an engineer. Every summer during middle school I went to the University of Eastern shore for the Center of Math, Science, and Technology. It was there that I got my first formal introduction to aeronautics, rocketry, and programming. I enrolled in the math, science, and computer science magnet at Parkville High School. At Parkville, I quickly became a part of the robotics team where I learned more about engineering and real life problem solving than I could through any class. I will be attending Johns Hopkins next fall for my undergraduate studies."

Kyrie Jig

Catholic University
Washington, DC
Mechanical Engineering
Bachelor of Science, May 2010
Email: kyriekjig@gmail.com

Robotics Academy Research Project:

Human-Robot Cooperation Robotic Space Crane, Research Associate
Principal Investigator: Dave Akin, Space Systems Lab, University of Maryland

Research and Work Experience

- ***Persun Design, Assistant – Washington, DC – Summer 2001***
  Assembled designed window box
- ***Catholic University Library – Washington, DC – Summer 2002 to 2006***
  Repaired and labeled books. Assisted in sorting, charging, and discharging books.
- ***Engineering Research Practicum***
  Constructed a robot using VEX kits to compare the maneuverability and traction of wheels vs. tank treads. Wrote a research paper on the results.

Memberships and Activities

- Girl Scouts, 1996-2004
- National Honor Society, 2005-2006
- FIRST Robotics/Robotics Club, 2004-2006
- Women's Choir, 2003-2004
- Tech (design and build sets for plays), 2003-2006
- Junior Civitan, 2004-2006
- Spanish Club, 2004-2005
- Asian Student Association, 2005-2006
- Thespian Honor Society, 2005-2006
- Bowie Boys and Girls Club Sports, 1998-2003

Skills and Certifications

- EZ-C
- P-Basic
- Robotics and design experience

- AutoCAD, IDEAS, ProDesktop, Microsoft Excel, PowerPoint, Word, and FrontPage
- Machine Shop tools: lathe, band saw, mill, drill press, hack saw, etc.

Honors and Awards

- Honor Roll, every quarter through high school
- National Honor Society
- Member Who's Who Among American High School Students 2005-2006
- Maryland Distinguished Scholar, Certificate of Honorable Mention
- Graduated from the Science and Technology Program at Eleanor Roosevelt High School

Hobbies and Interests

Constructing objects, robotics, drawing/painting, singing, playing soccer and other sports, graphic design, reading.

Personal Statement

"Robotics and observing how things work have always fascinated me, especially when doing FIRST 2 years ago. This experience inspired me to continue to work with robotics. This past year I worked a great deal with VEX robots and wrote a research practicum on my project. This year I will be going to Catholic University and hope to eventually get a masters degree in mechanical engineering."

Corey Johnson

University of Alabama, Huntsville
Huntsville, Alabama
Mechanical Engineering, Electrical Engineering
Bachelor of Science, May 2007
Email: coreyuah@gmail.com

Robotics Academy Research Project:
Human-Robot Cooperation Robotic Space Crane, Team Lead
Principal Investigator: Dave Akin, Space Systems Lab, University of Maryland

Research and Work Experience

- ***NASA Robotics Academy, Research Associate, Multi-segmented Planetary Rover Research (ASTERO) – College Park, MD, Summer 2005***
  Designed and built the control system, user interface, wheels, joint feedback system, and motor controllers for the ASTERO rover. Taught IDEAS CAD software, lathe and mill machining, and basic electronics to other members of the group.
- ***Redstone Arsenal, Research/Technical Assistant, Paperless Manufacturing Research – Huntsville, Alabama, Summer 2004***
  Used IDEAS Software to write CNC code from 3-D engineering models. Modified generic post processor to format .CL files to HAAS and EMCO CNC machine language. The goal was to shorten the time and cost of prototyping. Our team's research was tested successfully in the University of Alabama's integrated product team
- ***UAH Machine Shop, Machinist/CNC Programmer – Huntsville, AL, 2004 to present***
  Machine parts on manual and CNC mills and lathes, Maintain and repair shop equipment.
- ***O'Reiley's Auto Parts***

Memberships and Activities

- I.E.E.E. (The Institute of Electrical and Electronics Engineers), August 2003-present
  - Project Leader: South Eastern Conference Hardware Challenge May 2005-present Duties: Manage robotics team members and hardware design, preside over team meetings, etc.
  - Branch President (May 2004-May 2005) Duties: Preside over meetings, direct officers, ect.

- F.S.A.E. (The Formula Society of Automotive Engineers) (August 2003-present)
  - Formula Car Electronics: (August 2005- present): Designed wireless data acquisition system
  - Formula Car Electronics: (January 2004-May 2005): Designed dash and push button gear shifter that can handle extreme vibrations and heat.
- A.S.M.E. (American Society of Mechanical Engineers) (August 2004-present): Student Design Contest Electronics Leader: Designed rugged wireless controller for stair climbing robot using microcontrollers, motor drivers and data modem
- E.S.C (Engineering Student Council) (August 2004-present): general member, 2005-2006; Representative for IEEE Student Branch and EE student body, 2004-2005

Skills and Certifications

- SCUBA Open Water, certified by NAUI
- CNC mill and lathe, certified by UAH
- CPR/AED, certified by American Red Cross
- Software: C, C++, MATLAB, Excel, Maple, IDEAS, AutoCAD, Eclipse, Eagle, PBASIC

Honors and Awards

- Outstanding Participant Award, Outstanding Team Award, NASA Robotics Academy 2005
- Academic Scholarship, University of Alabama, Huntsville
- Scholars List, University of Alabama, Huntsville
- Honors High School Diploma
- FIRST team captain, team 547, 2003
- 1st place in Balsa wood bridge contest, 2003
- Elementary school 4H Space Project 1st place Award, won trip to Space Camp

Hobbies and Interests

Building autonomous robots, R/C vehicles, balsa bridges, homemade rocket engines, tinkering with 4-wheel drive Blazer and 4-wheeler. Tenor saxophone, tennis, NASA and defense robots.

Personal Statement

"I am double majoring in EE and ME because I love to design intelligent mechanisms. I enjoy ME because of the freedom of creativity it allows and EE because, to me, it is very challenging and rewarding. My master plan is to be an inventor. I plan to work for a while after college, then invent to my heart's content."

Anahita Karimi

Olin College of Engineering
Needham, Massachusetts
Mechanical Engineering
Bachelor of Science, May 2009
Email: anahita.karimi@students.olin.edu

Robotics Academy Research Project:
Cooperative team-diagnosis in multi-robot systems, Research Associate
Principal Investigator: Mehran Armand, APL

Work Experience

- ***United States Naval Observatory, SEAP Research Intern – Washington, DC, Summer 2005***
  Served as a research intern under the Science and Engineering Apprenticeship Program. Redesigned Earth Orientation Department website layout, facilitating communication of information and ease of navigation. Created algorithms to compare different methods of grid midpoint value determination in oceanographic data. Implemented these algorithms in Fortran 90 to find the preferred one and thus increase the diversity of data sources for oceanographic angular momentum models. Presented both website layout and midpoint algorithms at a formal culminating poster session.
- ***NASA Goddard Space Flight Center, SHARP Research Intern – Greenbelt, MD, Summer 2004***
  Collected and analyzed data via specialized software in IDL in order to determine the effects of solar wind on electron density distributions in the plasmasphere. This research could eventually be applied to satellite design in order to better protect these assets from the onslaught of solar wind.
- ***Naval Research Lab, SEAP Research Intern – Washington, DC, Summer 2003***
  Designed a java-based plane route-planning program which considers enemy radar coverage and terrain through the use of a greedy algorithm. Gave a formal presentation at George Washington University on program's structure.
- ***Kensington Political Action Committee – Kensington, MD, Summer 2002***
  Mined data for information relating to county council members' voting trends on specific bills via internet and databases to increase voting record awareness.

Memberships and Activities

- Olin Dance Project, Fall 2005 to present
- Franklin W. Olin Players, Fall 2005, lead in play
- Mechanical Engineering Steering Committee, Fall 2005 to present
- Society of Women Engineers, Fall 2005 to present
- American Society of Mechanical Engineers, Fall 2005 to present

Skills and Certifications

- Programming: Java, Stella, C++, OpenGL, Fortran 90
- Literate in: HTML, Microsoft Word, Power Point, and Excel, NIH Image, Image J, Metrowerks CodeWarrior, Macromedia Dreamweaver, Adobe Photoshop and GoLive, Arcview GIS, HyperStudio, AutoCAD Inventor, Solidworks, Visual Nastran4D, Matlab, and Simulink
- Experienced in: Public speaking, teamwork, web design, handling diverse situations and pressures, design process, shop work, French, and communicating ideas effectively

Honors and Awards

- Full tuition scholarship worth $130,000

Hobbies and Interests

Social dance especially swing and salsa, yoga

Personal Statement

"Ever since I can remember I've been interested in science and engineering of some sort. I attended high school at Montgomery Blair High School in Maryland and participated in the Math, Science, and Computer Science magnet program there. I decided to zero in on engineering as my interest for college in my freshman year of high school and never looked back."

Yale University
New Haven, Connecticut
Biomedical Engineering
Bachelor's of Science, May 2009
Email: Tanya.Klinkhachorn@yale.edu

Robotics Academy Research Project:
Motion Planning in Unstructured Environments,
Research Associate
Principal Investigator: Vladimir Lumelsky,

Research and Work Experience

- ***Tissue Engineering Laboratory, Yale University, Biomedical Engineering Research – New Haven, Connecticut, Spring 2006***
  Research focus: drug delivery system implementation, improvement of blood vessel stents. Perform image analysis, develop drug-imbedded matrices, and test/determine diffusion rates/coefficients.
- ***FIRST Robotics Team Captain – Morgantown, VA, 2003-2005***
  Devoted 20 hours a week during the build season. Worked with pneumatics to create mechanical appendages for a robot, designed and formulated strategies, learned to work with circuits, drive trains, and carpentry, mentored middle school students in the Lego MindStorms competition, contributed to raising over $20,000 by presenting/writing to several corporations, designed two team uniforms for competition.
- ***Yale Psychology Department, Research Assistant – New Haven, Connecticut, Fall 2005***
  Distributed and answered questions about surveys to middle school students. Asked what ways the CT school systems can be altered to better accommodate the educational needs of children.
- ***National Youth Science Camp – Bartow, West Virginia, Summer 2005***
  Intensive, 3½ week program focusing heavily in the natural sciences. Consisted of a lecture series, hands-on directed studies, and outdoor components, including kayaking and rock climbing
- ***Monongalia General and Ruby Memorial Hospitals, Volunteer – Morgantown, West Virginia, 2001 to 2005***
  Volunteered weekly shifts in several areas, including the ER, radiology, and pediatrics departments; answered questions and transferred patients and telephone calls as an information desk attendant; attended to customers needs in the gift shop, restocked shelves and maintained the store

Memberships and Activities

- Yale Women's Club Lacrosse
- Yale Anti-Gravity Society
- Freshman Olympics, Captain
- Intramural Sports: soccer, Calhoun College IM All-Star of the Week
- Yale Community Health Educators, Middle School Focus

Skills and Certifications

- C, C++, HTML
- Adobe Photoshop

Honors and Awards

- Yale Science, Technology, and Research Scholars (STARS), 2005
- Four-year varsity soccer letterman/starter, two-year varsity lacrosse letterman/starter, 2001-2004
- All-State/All-Conference/All American in soccer/lacrosse, 2004-2005
- Three-time President's Student Service Award Recipient
- Rhododendron Girls State Participant, 2004
- National Honor Society, 2002-2005
- National Merit Finalist, 2004
- Advance Placement Scholar, 2004
- Faltis Community Service Award, 2005
- Athletic Boosters John Rockis Award: Highest Cumulative GPA, 2005

Hobbies and Interests

Music, Photography, Painting/Drawing, Reading, Running, Skiing, attending concerts, traveling, neuroscience/psychology, animals, WVU basketball, collecting Beatles memorabilia, the outdoors

Personal Statement

"For as long as I can remember, I have been interested in engineering. As a child, I would spend afternoons watching my dad, an electrical and computer engineer, tinker with different contraptions. I remember my attempts to mimic him, wishing that one day I could study engineering like him. Upon realizing that becoming a skillful engineer would require hard work, I devoted myself to excelling in school, especially in the areas of math and science, which by then I had already come to love.

In high school, I joined the FIRST Robotics Team, dedicating my work to the areas of pneumatics and mechanical appendages. I spent three years learning and competing with the team and eventually became team captain. Alongside the Robotics team, I was also the captain of both the lacrosse and soccer teams and a regular volunteer within the community, amassing over 1000 hours of service during high school.

I have just completed my freshman year at Yale University and plan to study biomedical engineering. Upon graduating, I hope to study medicine and public health."

Tiffany Lee

University of South Florida
Tampa, Florida
Mechanical Engineering
Bachelor of Science, May 2009
Email: tiffanyelee@yahoo.com

Robotics Academy Research Project:
Autonomously Reconfigurable Technology,
Research Associate
Principal Investigator: Cynthia Cheung, Code 695

Research and Work Experience

- ***Camp Invention at St Michael's Independent School, Camp Counselor – Stuart, Florida, Summer 2004***
- ***Team 180 S.P.A.M. LEGO Camp, Camp Counselor – Stuart, Florida, Summer 2005***

Memberships and Activities

- US FIRST (For Inspiration and Recognition of Science and Technology), 2001 to present
  - College Mentor: team 1369, 2005-2006
  - Volunteer
- ASME (American Society of Mechanical Engineers)
  - Chairwoman- General Meeting (2005-2006)
  - Vice-Chair Nomination (2006-2007)
  - Student Conference (District F) Volunteer, 2006
- Society of Women Engineers (SWE)
- University of South Florida Robotics Club
- Engineering Pre-Medical Society
- Robot Chicks Union (RCU)
  - Chapter Lead, Southern Florida Chapter, 2004-Present
  - Senior Lead, RCU International, 2005-Present
  - Newsletter Design Editor, 2005-Present

Skills and Certifications

- Machining Skills
- Measurements reading
- Art- photography and drawing
- Microsoft Suite
- Photoshop
- AutoCAD

Honors and Awards

- International Baccalaureate Diploma Recipient
- Artwork displayed at Marvin S. Cone 17th and 18th Annual High School Juried Art Show, Lighthouse Gallery, Mars Gallery and Blake Library
- FIRST Robotics Competition- Team 180 S.P.A.M. Member (2003-2005): Co-Team Captain (2004-2005), Pit Boss (2003-2005), Safety Captain (2003-2005)
- Co-founder of the Southern Florida Chapter of the Robot Chicks Union (RCU)
- Was Interviewed for NASA'S REP-GIRL article on "Girl Role Models"; Project Manager – Yvonne Clearwater, Ph.D.
- Robot Chicks Union Illuminaries- XV 2005
- Nomination to United States Achievement Academy for Art
- Florida Bright Futures Scholarship Recipient
- Nomination for Vice Chair of USF's ASME Student Section (2006-2007)

Hobbies and Interests

Photography, Drawing, Reading, Robotics, Astronomy

Personal Statement

"I've always been interested as a young child in space and medicine. I became interested in robotics in middle school when my older brother joined our local FIRST team in high school. I have been apart of FIRST (For Inspiration Recognition in Science and Technology) Competition for seven years and currently also working with the Robot Chicks Union (RCU), to inspire females of all ages in science, math and technology. We are all a part of the future and have to make this world a better place for us to live and to continue exploring beyond our home planet Earth. I hope to get my BS in Mechanical Engineering and perhaps go on to get a Masters Degree in Biomedical-Engineering. I hope to help society in some way."

Carnegie Mellon University

Pittsburgh, Pennsylvania
Ph.D in Robotics, May 2009

Robotics Academy Research Project:

Cooperative Team-Diagnosis in Multi-Robot Systems, Team Lead
Principal Investigator: Mehran Armand, APL

Academic Experience

- ***Carnegie Mellon University – Pittsburgh, PA, Aug 2004 – May 2009***
  Doctor of Robotics, expected May 2009. Concentrations in machine learning and robot autonomy.
- ***University of Texas at Austin – Austin, Texas, Aug 2000 – May 2004***
  Bachelor of Science in Computer Sciences

Research and Work Experience

- ***University of Texas at Austin, Undergraduate Researcher – Austin, TX, Spring 2003-2004***
  Prepared a team of soccer-playing autonomous robots for the RoboCup 2003 and 2004.
- ***First Bytes Summer Camp, Program Assistant – Austin, TX, June 22-28, 2003***
  Exposed high school women to computer science and assisted them with programming assignments.
- ***Stanford Linear Accelerator Center, ERULF program, Research Intern – Menlo Park, CA, Summer 2002***
  Investigated the tuning and field stability of standing wave linear accelerators.
- ***Houston Taiwanese School, Summer Camp Co-manager – Houston, TX, Summer 2001***
  Promoted from former Counselor position. Served as intermediary between advisors and counselors. Provided counselors with supervision and assistance.
- ***Houston Taiwanese School, Summer Camp Counselor – Houston, TX, Summer 2000***
  Educated students in the areas of mathematics, art, and cooking. Preserved peace and maintained discipline in the teaching environment.

Memberships and Activities

- Dean's Scholars honors program, 2001-2004
- Women @ SCS, 2004- Present

Skills and Certifications

- Programming Languages: C/C++, Matlab, Java, LATEX, Haskell, Scheme, Mathematica, HTML
- Tools: CVS, BitKeeper, Adobe Photoshop, Microsoft Word, Excel, Powerpoint
- Operating Systems: Linux, all Microsoft platforms
- Language Skills: English, conversational Mandarin Chinese

Honors and Awards

- Student Marshal
- CRA Outstanding Undergraduate Honorable Mention
- Barry Goldwater Scholarship
- National Merit Scholarship

Hobbies and Interests

Reading, Swing dancing, playing board games

Personal Statement

"I started working with robots when a professor at my undergraduate institution decided to form a team of robot dogs for playing soccer. I found that I enjoyed the challenges involved in creating robot behavior and continued to pursue robotics in graduate school. Currently, I focus on machine learning techniques for autonomous ground vehicles in outdoor environments."

Maxim Lobovsky

Cornell University
Ithaca, New York
Engineering Physics
Bachelor of Science, June 2008
Email: mbl33@cornell.edu

Robotics Academy Research Project:
Autonomously Reconfigurable Technology,
Research Associate
Principal Investigator: Cynthia Cheung, Code 695

Research and Work Experience

- ***Advanced Fiber Engineering, LLC, Lab Technician – Newark, NJ, May 2004 to Present***
  Digital image capture and analysis, machining, electronics and wiring, drafting.
- ***ELB Internet Services, LLC, Computer Consultant – Westfield, NJ, Summer 2005***
  Web applications and design, PC repair and networking.

Memberships and Activities

- Cornell University Billiards Club, September 2005 to Present
- Cornell University Men's Fencing Club, January 2006 to Present
- Alpha Epsilon Pi Fraternity, Beta Chapter
- Cornell University Autonomous Underwater Vehicle Team January 2006 to Present

Skills and Certifications

- Programming
  - C++, Java, PHP, SQL
  - Microcontroller programming and optimization
  - Feedback and control loops
- Lab technician
  - Digital optical microscopy
  - Electronics/ Wiring
- Digital video/imaging and analysis
- Machining (lathe, mill, etc)
- CAD
  - AutoCAD
  - Parametric software (Inventor, SolidWorks)

Hobbies and Interests
Fencing, Rock Climbing, Billiards, Soccer, Skiing, Music

Personal Statement

"I have been passionate about learning, especially science, from an early age. This led me to attend a high school specializing in math, science, and technology. I narrowed my interests to more practical sciences after leading my award-winning high school's robotics team and assisting my father with his engineering consulting company.

I currently attend Cornell University where I am majoring in Applied and Engineering Physics. My innate desire to learn about every part in human knowledge prevented me from confining myself to a narrow field, so I chose Engineering Physics to allow me to experience a wide range of topics in science.

I hope that I can maintain the breadth of my experiences and knowledge and only request that my future career be related to research."

Anthony Luchner

University of Alabama in Huntsville
Huntsville, Alabama
Computer/Electrical Engineering
Bachelors of Science, June 2008
Email: t.luchner@gmail.com

Robotics Academy Research Project:

Human-Robot Cooperation Robotic Space Crane, Research Associate
Principal Investigator: Dave Akin, Space Systems Lab, University of Maryland

Work Experience

- ***Pratt & Whitney Rocketdyne, Student Engineer – Huntsville, Alabama, June 2005-2006***
  Reviewing, editing, and revising of Technical Documents, including Software Requirements Documents and Software Design Documents
- ***United States Marine Corps – 2000-2005***
  Hands-on experience as an Avionics/Electronics and Weapons Technician, working experience with various types of avionics and electronic test equipment; 2 years as a Supervisor, commended for exceptional leadership skills; Military courses and training in electronic and laser technology

Memberships and Activities

- Charger IEEE, Aug 2005 to present: compete in multiple robotics competitions, including the SouthEast Convention and Trinity College Fire Fighting Robot Competition
  - Vice President, Finance
  - Vice President, External Affairs

Skills and Certifications

- C, C++
- Electronics troubleshooting
- Military Inspector qualification
- Leadership

Honors and Awards

- Honor Scholar at UAH, 2005-2006
- Letters of Commendation (2) for outstanding leadership in a combat zone

- Eagle Scout, 1999

Hobbies and Interests
Robotics, Web design, landscaping, reading, music, outdoor activities

Personal Statement
"I fell in love with technology after working as an electronics technician of helicopters for the Marine Corps. I always had a small interest in robotics, but never followed through with the interest. After finishing my enlistment, and returning to school for computer engineering, I joined a local robotics club. My ultimate career goal is to work either with robotic amputee prosthetics or humaniod robots designed for space travel."

Kevin Luu

Massachusetts Institute of Technology
Cambridge, Massachusetts
Electrical Engineering and Computer Science
Bachelors of Science, June 2009
Email: luuk@mit.edu

Robotics Academy Research Project:
Motion Planning in Unstructured Environments,
Research Associate
Principal Investigator: Vladimir Lumelsky, Code 588

Research and Work Experience

- ***MIT, Department of Architecture/Media Lab, House_n Research Intern – Cambridge, MA, 2005-2006***
  Investigated methods of merging new technologies with person-centered (user-friendly) design in an effort to meet challenges of future homes. Assembled and tested wireless sensors used to monitor people's daily activities.
- ***Oceanit Laboratories, Inc., Summer Engineering Intern – Honolulu, HI, Summer 2005***
  Analyzed rainfall data in effort to create more efficient drainage systems. Drafted and designed development plans for various construction locations of outfalls.
- ***Intel International Science and Engineering Fair, Team Leader – 2004-2005***
  Led three-year team project on wastewater disposal at Maryknoll High School. Researched the use of soil microbes to lower toxicity level of wastewater, identified microbes through plating techniques and DNA sequencing, designed microbial bioreactor to optimize performance of microbes in degrading concentration levels of wastewater. Honors: Best Team Project & Best in Category of Engineering.
- ***Hawaiian Electric Company Electric Vehicle Competition, Co-Captain – Honolulu, HI, 2001-2005***
  Applied mechanical and electrical engineering principles in design and construction of car that ran on two car batteries; wrote comprehensive documentation report and presented to evaluation committee.
- ***College of Engineering, University of Hawaii at Manoa, High School Summer Intern Program – Manoa, HI, Summer 2004***
  Designed and tested C codes to optimize performances of autonomous robot for underwater operations.

Memberships and Activities

- National Honor Society, 2003-2005
- Maryknoll Investment Club, 2003-2005
- Maryknoll High School Math Team, 2001-2005, Co-Captain 2004-2005, League Merit Award, 2005

Skills and Certifications

- Fluent in Chinese (Cantonese)
- MS Word, Excel, PowerPoint
- AutoCAD, Photoshop, Basic C, Matlab

Honors and Awards

- American Mathematics Competition 12, 2003
- American Industrial Hygiene Association Hawaii Section Science Project Award, 2003
- American Chemical Society Hawaii Section Science Project Award, 2003
- University of Hawaii: John Burn's School of Medicine: Science Education Partnership Award, 2003
- Economics Challenge, 3rd Place Overall in State, 2004
- HAIS (Hawaii Association of Independent Schools) Best Team Project, 2004, 2005
- Hawaii Pacific University Scholarship Award, 2004
- The Society of Environmental Toxicology and Chemistry: 3rd Place in Environmental Toxicology and Chemistry, 2004
- Oahu Math League, Merit Award, 2005
- Herbert Hoover Young Engineer Award, 2005
- McInery Foundation Award, 2005
- Chevron Award of Excellence for Best in Engineering Senior Research, 2005
- Hawaii Pacific University Award for Best Senior Research in Category (Engineering), 2005
- Finalist, Fukunaga Foundation Scholarship, 2005
- Hawaii Community Foundation Scholarship, 2005
- Hawaii Society of Professional Engineers Scholarship, 2005

Hobbies and Interests

Tennis, Video Games, Movies, Math, Science, AutoCAD

Personal Statement

"I'm originally from Honolulu, Hawaii, where I've been living my entire life. I've always had an interest in robotics, and am intruded by the contributions it have towards society. Technology is an important attribute to the future of mankind, so it is necessary to further the research and development of robotics to continue its advancements. However, in order for any significant breakthrough to occur, I believe that hard work and determination are key factors, and these are the characteristics that allow me to achieve the goals that I have set for myself. "

Alexander May

Carnegie Mellon University
Pittsburgh, Pennsylvania
Mechanical Engineering
Bachelor of Science, May 2009
Email: amay@andrew.cmu.edu

Robotics Academy Research Project:

Development of Robotic Servicing Technologies, Research Associate
Principal Investigator: Richard Fink, Code 442

Research and Work Experience

- ***National Institute of Standards and Technology, Student Intern – Gaithersburg, Maryland, Summer 2004***
  "Determination and Implementation of the Most Effective Method of Load Detection on the Tetrahedral Robotic Apparatus (TETRA)" Duties included definition of problem; conceptual design of potential solutions; background research on TETRA and solution components; fabrication, data testing, analysis, and modification of sensor system

Memberships and Activities

- CMU Carnegie Involvement Association (CIA), Mechanic 2005-present, Secretary 2006-present
- CMU Fencing Club, 2005-present
- CMU Robotics Club, Mobot and Colony II Projects, 2005-present
- Boy Scouts of America Troop 944
  - Member 1997-2005
  - Eagle Scout, 2003
  - Assistant Scoutmaster 2005
- MBHS FIRST "Blair Robot Project" Team 449
  - Crate-building sub-team leader, 2002-2003
  - Competition "pitmaster", 2003-2004
  - General engineer, 2002-2005
  - Vice president, 2004-2005
- MBHS National Honor Society, chaplain 2004-2005
- Wildwood Summer Theatre set crew
  - "West Side Story" 2002
  - "Chicago" 2003
  - "Sweeney Todd: The Demon Barber of Fleet Street" 2004
  - "Grand Hotel" 2005
- YMCA Arylawn Campus, volunteer belayer 1998-2004

Skills and Certifications

- Interactive C
- C++
- Java
- NIH Image
- Scion Image
- MS Word, Excel, PowerPoint
- Autodesk Inventor
- SolidWorks

Honors and Awards

- Montgomery County Public Schools, AP Scholar Distinction, September 2005
- Knights of Columbus (Maryland Mater Dei Chapter), Boy Scout of the Year, June 2005
- Capital PC Users Group, Science Fair Project Recognition, May 2005
- Washington Academy of Sciences, Alexander Bell Circle Certificate: "Superior Research", March 23, 2005
- Montgomery County Science Fair, Team Projects: Physical Emphasis, 3rd Place, April 2005
- FIRST Chesapeake Regional Competition (Annapolis), 1st Place 2004
- International Bowhunting Organization, World Championships, YMF Trophy Class, 2000, 2001, 2002, 2003
- Boy Scouts of America, Eagle Scout Rank, 2003

Hobbies and Interests

Archery, art (chain mail armoring, drawing, calligraphy, drafting, origami, cartooning, woodworking, etc), cooking, fencing, rock climbing, building/engineering projects.

Personal Statement

"Alexander Kan May started his robotics career, as many do, through an early interest in Legos ™ and eventually in their robotics-building kit. Having strong spatial visualization skills, he also developed interests in art, sculpture in particular. During high school he enjoyed his time with the Blair Robot Project, a robotics club that competes in the USFIRST Robotics Competition. During the summer between his junior and senior years, he completed a senior research project in cooperation with one of his peers entitled "Determination and Implementation of the Most Effective Method of Load Detection on the Tetrahedral Robotic Apparatus (TETRA)." Alexander is now a student at Carnegie Mellon University seeking a major in mechanical engineering and potentially minors in either of (or both) art and robotics. He also enjoys archery, cooking, fencing, rock climbing, and the occasional engineering challenge."

University of Michigan
Ann Arbor, MI
Computer Engineering
Bachelor of Science, May 2010
Email: keegreil@umich.edu

Robotics Academy Research Project:

Development of Robotic Servicing Technology, Research Assistant
Principal Investigator: Richard Fink, Code 544

Research and Work Experience

- ***Ford Motor Company, Research and Advanced Engineering Summer Intern – Dearborn, Michigan, Summer 2005***
  Assigned to the C-264 experimental hydrogen fuel cell vehicle program; within six weeks put in charge of $6,000,000 testing facility; worked closely with engineers in Dearborn, Canada, and Germany; assisted on a ten day hot weather testing trip at the Arizona Proving Grounds.
- ***Student Space Systems Fabrication Lab, University of Michigan – Ann Arbor, MI, 2005***
  Tethered satellite testbed control and data handling: researched the use of a digital camera for gathering position data and formation flying, assisted in design and construction of the main computer board and various peripherals for the Control & Data Handling sub team.

Memberships and Activities

- Soccer, track, cross-country, 2001-2005
- FIRST Robotics President, 2004-2005
- Eagle Scout, 2005
- Satellite research team, 2005-2006
- Air Force ROTC, 2005-2006
- National Honor Society

Computer Skills

- Java
- C++
- Matlab
- Windows
- Linux
- "Secret" level security clearance

Honors and Awards

- First Honors throughout high school
- Eagle Scout
- Athletic Scholars Award
- Renselaer Award
- Air Force ROTC College Scholarship

Hobbies and Interests

Robotics, Computer programming, music, guitar, bass, bongos, composing music, writing poetry, soccer, cross country skiing, rock climbing

Personal Statement

"I was born and raised in Detroit, MI. I was home schooled for the first eight grades, after which I went to the University of Detroit Jesuit High School. The summer before my senior year I interned at Ford Motor Company where I worked on their experimental hydrogen fuel cell program. The following year I started and led the school's FIRST Robotics team. The team was very successful, seeding second place out of a field of 30+ teams, despite a tight budget. I am currently a sophomore attending The University of Michigan School of Engineering. Aside from classes, I am working on the Tethered Satellite Testbed project, and was recently awarded as the "Team's Most Valuable Freshman." I expect to receive a degree in Computer Engineering in 2010."

Seon Reis

Morgan State University
Baltimore, MD
Industrial Engineering
Bachelor of Science, May 2007
Email: seonlreis@msn.com

Robotics Academy Research Project:

Morgan State Summer Institute for Robotics (SIR), Team Lead
Principal Investigator: Clifton Martin

Research and Work Experience

- ***University of Michigan, Student Research Opportunity Program – Ann Arbor, MI, Summer 2004***
  Participated in the research on "Finite element analysis for the Turbine Blade Inspection Machine". As a member in a group of three students and a mentor, I was responsible for designing a plate that would be placed adjacent to a laser sensor, which would measure a blade located on a 360 degree rotary stage. The stage holds the blade in place, so that the blade will be measured properly by the laser sensor. Without designing a new plate for the laser sensor, the sensor would operate properly and would measure the blade accurately.
- ***Morgan State University, Reconfigurable Factory Testbed, Research Student – Baltimore, MD, 2005-2006***
  Worked with graduate and undergraduate students on a Reconfigurable Factory Testbed Project. I designed the Human Machine Interface (HMI) controls in a web-enabled distributed supply chain, created commands called "tags", which adds functionality to the system.
- ***New York University, Upward Bound Program Student Intern – New York, NY, 1999-2003***
- ***Morgan State University, Counseling Center Office Assistant – Baltimore, MD, 2005-2006***

Memberships and Activities

- National Society of Black Engineers, 2005 to present
- Society of Automotive Engineers, 2005 to present
- Caribbean and International Student Association, 2004 to present

Skills and Certifications

- Microsoft: word, excel, powerpoint, project

- AutoCAD
- ANSYS
- Indusoft
- Pro-ENGINEER
- Java

Honors and Awards

- Dean's List, 2003-2005
- Grant Brett Promethean Kappa Tau Freshman Honor Society, 2003
- Joseph Tauber Scholarship, 2003

Hobbies and Interests

Designing automobiles, going to the movies, spending time with my family and friends, visiting museums and traveling

Personal Statement

"I am the last child and the only first generation American in my family who migrated to the Unites States twenty one years ago from Guyana. Like many immigrants, my parents came here to capture the American dream and give their children a world class education. I grew up in the shadow of my two older sisters' excellent school record. I was always told that education is the key to anything I want in live and that nothing is impossible to do if you put your mind to it. Since I was a toddler, I loved cars and drawing them. As I got older, I realized that my passion did not change and decided I wanted to pursue car designing as a profession. I am a junior at Morgan State University majoring in Industrial Engineering under the mentorship of Dr. Hargrove, Chairman of the Industrial Engineering Department at Morgan State. The idea of creating new and innovative products for consumers is very interesting and compelling. I am intrigued by the mechanics and structural components of all modes of transportations, buildings and appliances. I am looking forward to adding my creation that will benefit people and change the way they live."

Carnegie Mellon University
Pittsburgh, Pennsylvania
Robotics
Master of Science, May 2007
Email: krohlin@cs.cmu.edu

Robotics Academy Research Project:

Development of Robotic Servicing Technology, Team Lead
Principal Investigator: Richard Fink, Code 544

Academic Experience

- ***Carnegie Mellon University, Pittsburgh, PA***
  M.S. in Robotics, May 2007
- ***United States Naval Academy, Annapolis, MD***
  B.S. in Systems Engineering, Distinguished Graduate, 2005
- ***United States Air Force Academy, Colorado Springs, CO***
  Semester exchange program, Fall, 2004

Research and Work Experience

- ***The Robotics Institute, Carnegie Mellon University, Graduate Student – Pittsburgh, PA, 2005 to present***
  Full-time, multi-robot teams and human-robot interaction research with autonomous mobile robots, specifically modified Segway RMPs and the Sony QRIO. Makes use of C++ in the Linux environment.
- ***Lawrence Livermore National Laboratory - Livermore, CA, Summer 2004***
  Worked with the Remote Optical Characterization Sensor Suite (ROCSS) in the High Explosives Application Facility (HEAF) performing experiments and analyzing spectroscopy data for a Top Secret government project.
- ***Maui High Performance Computing Center – Maui, HI, Summer 2005***
  Worked on a Computational Fluid Dynamics (CFD) project using Cobalt, a CFD analysis flow solver, to design the layout of a new supercomputer room.
- ***Senior Design Project: Checker-Playing Robot, 2004-2005***
  A 5 DOF robotic manipulator plays a game of checkers with a human opponent. The system is controlled through MATLAB by a thresholded color camera image that stores the state of the checkerboard and takes the appropriate action based its state.

Memberships and Activities

- Military Leadership Experience: Company Executive Officer, Spring 2005; Squad Leader, Summer 2003 & Fall 2004; United States Navy, Active Duty, Officer 2005-present, Midshipman 2001-2005
- Navy Softball Team, 2001-2003: National Championship 2nd place
- Intramural Women's Basketball, Cross Country, Half-Marathon Team, 2001-2005, 3 year consecutive all-school basketball champions
- CMU Women's Club Lacrosse, 2005-present
- CMU Cross Seekers Baptist Campus Fellowship, 2005-present
- Officer's Christian Fellowship, Leadership Team, Lead Female Vocalist in Praise Band, 2003 to 2005
- US Naval Academy Women's Glee Club, 2001-2004
- Special Olympics Coordinator, for annual county event, 2002-2005
- Tau Beta Phi Engineering Honor Society – Vice President 2004-2005, membership 2004 – present
- National Society of Collegiate Scholars – 2002- present
- Society of Women Engineers – 2002-present

Skills and Certifications

- US Air Force Free Fall Parachute School, Jump Certified 2003
- US Air Force Soaring School, Soaring Certified 2003
- Programming: MATLAB, C++

Honors and Awards

- National Science Foundation Honorable Mention, 2005
- Systems Engineering Best Senior Design Project Award, 2005
- Distinguished Graduate, US Naval Academy 2005
- Navy Burke Continued Education Scholarship, 2005
- US Naval Academy Superintendent's list, 5 semesters

Hobbies and Interests

Running, hiking, biking, skiing, ice skating, softball, lacrosse, singing, dancing, guitar, movies

Personal Statement

"I am a 2nd year graduate student in the Robotics Institute at Carnegie Mellon University, where I plan to graduate with an M.S. in robotics. I spent the first 18 years of my life in a small town in northwestern Pennsylvania where the population of cattle exceeds the human population. After a 4 year adventure in Annapolis at the US Naval Academy where I got my B.S. in Systems Engineering, I returned to the great state of PA to study robotics. I was commissioned as a Nuclear Surface Warfare Officer in the US Navy in May of 2005. I am an engineer at heart and am curious about how things work. I love to travel and try new things. I rarely watch the same movie twice, because there is always something new to see. I love warm weather, perfect for running, hiking, and cycling."

Stephanie Roth

University of Michigan
Ann Arbor, Michigan
Electrical Engineering
Bachelor of Science, June 2010
Email: steproth@umich.edu

Robotics Academy Research Project:

Conformal Gripping Systems for Space Robots
Principal Investigator: John Vranish, Code 695

Research and Work Experience

- ***Oakland University, Summer Research Intern – Rochester Hills, MI, Summer 2005***
  Novel Hybrid Neural Agents for Immunoinformatics. helped look up protein combinations and developed a basic understanding of the structure and function of the immune system.
- ***Sunrise Assisted Living, Dining Room Server – Rochester Hills, MI, September 2005 to May 2006***

Memberships and Activities

- Ultimate Frisbee Club, founder, 2005-2006
- Cross Country team, 2002-2004
- Track and Field team, 2003-2005
- Key Club Member, 2002-2003
- NHS Member, 2003-2006
- Marching Band member, 2002-2004
- Robotics team member, 2004-2006
- Crittenton Hospital Volunteer, 2002-2005

Skills and Certifications

- Written and spoken French
- Matlab
- Visual Basic
- Basic

Honors and Awards

- 2005 FIRST Robotics National Championship Semi-Finalists
- APFIM music scholarship at Rochester Adams High School, 2004
- Cross Country "Big Drop" Award, 2002, drop of 2.5+ minutes
- Competitor: Cross Country State Meet at Michigan Speedway, 2004

- Cross Country Sportsmanship award, 2004
- Michigan Interscholastic Track Coaches Association Academic All-State Award, 2004
- Rochester Conservatory of Music Scholarship honorable mention
- Solo and Ensemble Festival piano and clarinet awards

Hobbies and Interests

Distance running, piano, clarinet, ROBOTICS!!!

Personal Statement

"I am currently a freshman at the University of Michigan majoring in Electrical Engineering. I have been an active participant on my high school's FIRST Robotics team in which we were 2005 National Championship Semi-Finalists. Next year I plan to join the Solar Car Team at the University of Michigan and return to help mentor my robotics team. My plans for the future are to apply Electrical Engineering to the medical field involving prosthetics, improving them to be as human-like as possible. "

Bradley Smith

Iowa State University

Ames, Iowa
Aerospace Engineering
Bachelor of Science, Spring 2009
Email: bysmith@iastate.edu

Robotics Academy Research Project:

Cooperative Team-Diagnosis in Multi-Robot Systems, Research Associate
Principal Investigator: Mehran Armand, APL

Work Experience

- ***Rockwell Collins, Associate Technical Intern – Cedar Rapids, IA, Summer 2005***
  Built supplemental type certificate CD's for customers and assisted engineers with the design of the layout for the avionics in planes
- ***Rockwell Collins, Electro Hydraulic Automation, Project Assistant – Cedar Rapids, IA, Summer 2004***
  Worked in the shop fabricating hydraulic power units and assembling sub systems for the power units

Memberships and Activities

- Iowa State University Marching Band, trumpet, 2005
- Martial Arts: Judon, HapKiDo, 2006
- Triangle Fraternity, Engineers, Architects, Scienctists
- American Institute of Aeronautics and Astronautics, Freshman Representative, 2005-2006
- FIRST Robotics Competition, Linn-Mar Robotics Club
  - Competed at National Competition
  - Placed top 8 of 54 teams at regional in St. Louis
  - First Place at regional in St. Louis
  - Mechanical Team Leader
  - Competition robot operator
- Civil Air Patrol

Skills and Certifications

- Private Pilots License, 2004 to present
- Metalworking, Machining, Woodworking
- Java
- Visual Basic

Honors and Awards

- Dean's list, Iowa State University, 2005
- Who's Who in American High Schools, 2003-2005
- Linn-Mar High School Honor Roll, 2001-2005
- Green Castle Airport Scholarship for Private Pilot's License, 2004
- Civil Air Patrol Cadet NCO of the Year for the State of Iowa, 2002
- Civil Air Patrol Cadet NCO of the Year for East Iowa Cadet Squadron, 2002

Hobbies and Interests

Flying, remote control planes, woodworking, metalworking, programming, robotics, unmanned aerial vehicles, vertical take-off and landing aircraft

Personal Statement

"My name is Bradley Yeager Smith. I grew up in San Diego, California. I moved to Wichita, Kansas when I was eight and later moved to Cedar Rapids, Iowa when I was twelve. From a combination of always being goal oriented and having a great work ethic, I have been able to set myself apart from others. Thanks to Civil Air Patrol I had the opportunity to attend Leadership schools where I learned how to bring people together to accomplish a common goal. In high school I discovered the realm of robotics. Now realizing an entire field of possibilities, college has given me the tools to make my ideas and ambitions a reality."

Tina Srivastava

Massachussetts Institute of Technology
Cambridge, Massachussetts
Aeronautics/Astronautics Engineering
Bachelor of Science, June 2009
Email: tinaps@mit.edu

Robotics Academy Research Project:
Human-Robot Cooperation Robotic Space Crane, Research Associate
Principal Investigator: Dave Akin, Space Systems Lab, University of Maryland

Research and Work Experience

- ***Raytheon, Intern in Network Centric Systems and Space-Airborne Systems – McKinney/Dallas, TX, Summer 2005***
  Completed data analysis for supply chain management and identified repetitive functions to increase efficiency. Tested electrical parts, conducted failure analysis, charted failure rates, and made presentations to management. Participated in conference calls with suppliers of sensitive defense related printed wire boards and integrated circuits with teams of six cross-departmental members of upper management.
- ***Greenhill School Computer Department, IT Specialist – Addison/Dallas, TX, Summer 2004***
  Digital Imaging, updated computers and reconfigured processors for high capacity application
- ***Merrill Lynch, Intern – Dallas, TX, Summer 2004***
  Worked with portfolio management team to qualify key prospects and update contact database
- ***MethodsMarket.com, Assistant – Dallas, TX, 2002 to present***
  Designed marketable product logos using CAD tools, website updating, and data archiving

Memberships and Activities

- MIT Undergraduate Association, Class Council for Class of 2009, 2005-2007
- MIT Baker Foundation, Institute Committee Member, 2005 to present
- Dallas BEST Robotics Competition, Team Leader, 2002-2005
- Robot Club at Greenhill School, President, Founder,
- Plano Teen Court, Texas Judicial System, Attorney and Judge, recognition and awards by the City Mayor, 2001-2005

- International Club, Model United Nations, President, Head delegate, 2002-2005

Skills

- Adobe Photoshop
- AutoCAD
- Certified Six Sigma Specialist
- MS Office: Word, PowerPoint, Excel, FrontPage
- Machine shop
- Welding

Honors and Awards

- Speaker nomination for American Association of University Women seminar, 2004
- Academic Scholar Award, Greater Dallas Asian American Chamber, 2005
- Summa, Magna, & Maxima Cum Laude National Latin Exams, 2002-2004
- National Gold Award for artwork and featured at Dallas Museum of Art, 2004-2006
- Baroda University Recognition, 2004
- AP Scholar with Distinction
- National Merit Finalist

Hobbies and Interests

Swimming, Tennis, Lion's Club Sight and Tissue Foundation, Rock-climbing, Hiking, Kayaking, Painting, Space, Mars, Robots

Personal Statement

"I love robotics because it is a hands-on way of applying engineering knowledge. Plus, robots have revolutionized many fields from medicine to space travel. Robotics does not feel like work, it feels like play. During the BEST Robotics competition in high school, I would find myself running out to the garage to test out an idea at 3am because my mind is constantly engaged. Living and working with robotics' students this summer in the NASA Robotics Academy program is no different, except that there are others who join my brainstorming sessions past work hours for invigorating fluid exchange of ideas."

Larry "Justin" Stiltner

Bluefield State College
Bluefield, West Virginia
Computer Sciences
Bachelor of Science, May 2007
Email: justinstiltner@gmail.com

Robotics Academy Research Project:
Autonomously Reconfigurable Technology, Team Lead
Principal Investigator: Cynthia Cheung, Code 695

Academic Experience

- ***Southwest Virginia Community College, Richlands, VA – August 2001 to May 2004***
  Associate of Arts and Sciences, Computer and Electronics Technology, specialization in internetworking

Research and Work Experience

- ***Buchanan County Public Schools, Computer Technician/ Wireless Network Administrator/ Wireless Network Designer – Grundy, VA, January 2002 to December 2004***
  Setup, repair and maintain IP networks consisting of Frame Relay, ATM, Ethernet, and 802.11b/g technologies, Repair and maintenance of desktop PCs and servers.
- ***Student Support Services, Tutor – August to December 2005***
- ***Pal's Electric Shop Inc., Laborer – Grundy, VA, Summer 2005***
  Repair and rebuild heavy mining equipment. Duties included welding, cutting, metal fabrication, troubleshoot and repair electrical and hydraulic systems.

Memberships and Activities

- Junior Reserve Officer Training Corps (JROTC)
- FIRST Robotics Competition, 2000 to present
- Intelligent Ground Vehicle Competition: 2005, Captain 2006-2007
- National Beta Club
- Future Business Leaders of America
- Boy Scouts of America
- Science Seminar
- Oral Communications Seminar
- Grundy High School Football, Track

- Bluefield State College Independent Projects Organization
- Bluefield State College Project Segway Fox
- Phi Kappa Gamma Fraternity

Skills and Certifications

- Windows: 3.1, 95, 98, 98SE, 2000, 2000 server, XP, 2003 server
- Linux: Redhat 7.3, Fedora Core 1
- Microsoft: Office, Visual Studio, Visual basic, C++, Visio
- Symantec Ghost
- Autodesk: Autocad, Inventor, Mechanical Desktop
- Microchip MPLAB
- Ethereal Packet Capture Software
- Netstumbler wireless network detector and analyzer
- A+ Certified Professional, May 2003
- IC³, April 2003
- Welding
- Conventional Machine Work

Honors and Awards

- 1st Place State of Virginia, Future Business Leaders of America, Computer Concepts, Spring 2000
- Most Inventive in Science Field, Grundy High School, Spring 2000
- Eagle Scout Rank, Boy Scouts of America, May 2002
- Woodie Flowers Award Nominee, FIRST Team 388, Spring 2005

Hobbies and Interests

FIRST Robotics Competition, Intelligent Ground Vehicle Competition, Radio Controlled Flight, Airplanes, Helicopters, Fishing, Autonomous and Teleoperated robotics, Welding, Machining, Electronic Circuits, design and manufacture of custom devices, Automotive Mechanics, Mechanical and Electrical Design, Camping

Personal Statement

"Born in a small coal mining town in southwest Virginia, the only child of a coal miner and a secretary, I grew up knowing the value of a hard days work. I went to a small high school of 900 students and had always been interested in computers, electronics, and things mechanical. It was the FIRST robotics team that I helped start at my school that opened the world of robotics and engineering to me. My senior year in high school I began taking engineering and robotics courses via the internet as well as being the captain for the FIRST team. I am currently working toward a degree in computer science at Bluefield State College. I have been selected as the project head for an autonomous segway project which will include PID control, GPS, laser range finders and inertial measurement systems. I also continue to mentor my old high school's FIRST team."

Jeremy Swindell

University of Maryland, College Park
College Park, Maryland
Electrical Engineering
Bachelor of Science, June 2009
Email: jswindel@umd.edu

Robotics Academy Research Project:
Development of Robotic Servicing Technology,
Research Associate
Principal Investigator: Richard Fink, Code 442

Research and Work Experience

- ***University of Maryland, College Park, STAND Internship Program – College Park, MD, 2004-2005***
  Worked on robotics research with Dr. Ken Hennacy. Developed procedures to give common sense reasoning abilities to Honda made robots so that they could function alongside humans and wrote a thesis paper called "Common Sense Reasoning for Household Robots".
- ***Target, Cashier – Forestville and Largo, MD, 2004-2005***
- ***Six Flags America, host – Mitchellville, MD, 2003-2004***

Memberships and Activities

- Teen Court, juror and lawyer, 2003-2004
- National Society of Black Engineers Jr, Vice President 2003-2005, Programs Chair 2004-2005
- National Society of Black Engineers, 2005-2006

Skills and Certifications

- Microsoft: word, excel, powerpoint
- C++
- Java

Honors and Awards

- Dean's List, 2005
- Science and Technology Research Practicum, presenter, May 2005
- Principal's Honor Roll, 2003-2005
- Science and Technology Program at Charles H. Flowers High School
- University of Maryland Presidential Scholarship

Hobbies and Interests

In my spare time I like to read interesting books that range from mystery to adventure. I like to participate in basketball, football, and soccer. I am very

interested in the field of robotics because I think the possiblities in the field are endless and can positively impact mankind. I am interested in developing and testing software and working in groups to produce technology that makes a difference in the world.

Personal Statement

"I was born on January 24, 1987 to Marshall and Patricia Swindell. I am the fourth oldest child out of eight children. I have belonged to the Way Back To Pentecost Church in Washington D.C. all of my life and attending the church along with lessons from my parents have given me great morals that I hold very high. I am a hardworking, intelligent, and enthusiastic individual who enjoys life.

I have always been a dedicated student and have believed that hard work pays off. In elementary and middle school I was always on the Honor Roll and in the Talented and Gifted Program. I placed into the Science and Technology Program at my high school and graduated with a 3.9 average in the top 5% of my graduating class. I then received a full tuition scholarship, Presidential Scholarship, to the University of Maryland where I am currently doing well."

Ceryen Tan

Massachusetts Institute of Technology
Cambridge, Massachusetts
Electrical Engineering and Computer Science
Bachelor of Science, May 2008
Email: ctan@mit.edu

Robotics Academy Research Project:

Advanced Interface Technology,
Research Associate
Principal Investigator: Corinna Lathan at AnthroTronix

Publications

- V. Sundramoorthy, C. Tan, P. Hartel, J. den Hartog, and H. Scholten. "Functional Principles of Registry-based Service Discovery", IEEE LCN 2005 Accepted Papers.
- C. Tan, K. Mills. "Performance Characterization of Decentralized Algorithms for Replica Selection in Distributed Object Systems", Proceedings of the 5th International Workshops on Software Performance, July 11-14, 2005, Palma De Majorca, Spain, ACM Press, pp. 257-262.
- K. Mills, S. Rose, S. Quirolgico, M. Britton, and C. Tan. "An Autonomic Failure-Detection Algorithm", Proceedings of the 4th International Workshop on Software Performance (WoSP 2004), January 14-16, 2004, San Francisco, California, ACM Press, p. 79.

Research and Work Experience

- ***Massachusetts Institute of Technology, Hatsopoulos Microfluids Laboratory, Undergraduate Researcher – Cambridge, Massachusetts, November 2005 to June 2006***
  Implemented MATLAB wrapper for execution of MATLAB code within Java, a feature presently unsupported by MathWorks. Evaluated potential computing performance of Cytosolve, a distributed modeling system. Investigated incorporation of MATLAB models into Cytosolve and effects on computational efficiency.
- ***National Institute of Standards and Technology, Intelligent Systems Division, Computer Technician – Gaithersburg, MD, Summer 2005***
  Implemented optical flow algorithms for use in long-range vehicle detection and visual odometry. Evaluated algorithms; concluded they are too time consuming and inexact for implementation. Developed vision system for road detection in complex lighting conditions. Resulted in learning algorithm that detects shapes without previous knowledge, vastly improving upon existing capabilities.
- ***National Institute of Standards and Technology, Advanced Network Technologies Division, Engineering Trainee – Gaithersburg, MD, Summer 2004***
  Evaluated and formally verified a student-designed ad-hoc networking protocol, FRODO, utilizing SPIN Model Verification to enforce operational

conditions and search for inherent design flaws. Teamed with PhD student to redesign protocol to improve fault tolerance and remove deadlocks

- ***National Institute of Standards and Technology, Advanced Network Technologies Division, Engineering Trainee – Gaithersburg, MD, Summer 2003***
  Implemented adaptive fault-detection algorithm into JINI networking protocol to increase fault tolerance in situations of large network load and high network failure. Designed and evaluated set of decentralized load balancing algorithms for distributed networks that resulted in a theoretical hundred-fold increase in effective resource management.

Hobbies and Interests

- MIT Chapter of Institute of Electrical and Electronics Engineers (IEEE), 2005 to present
- Mars Gravity, Fall 2004
- Table Tennis Club, 2004 to present
- RoboCraft, 2005, 2006
- FIRST Robotics, 2001 to 2004

Skills

- Programming: C, C++, Java, OpenGL, HTML, Promela, Wolverine SLX, MATLAB
- Operating Systems: Windows, Macintosh, Linux

Honors and Awards

- National Merit Special Scholarship, May Department Stores, 2004
- Intel Excellence in Computer Science Award, 2004
- Second Place, University of Maryland Programming Contest
- First Place, 2004: Senior Division Computer Science Category Award; Certificate from the Institute of Electrical and Electronics Engineering; Membership to Association for Computing Machinery DC Chapter; Cash Reward from the Capital PC Users Group; Cash Reward from Armed Forces Communications and Electronics Association Logistics Management Institute; Certificate from the U.S. Air Force
- Third Place Certificate from the U.S. Army Research Office, 2004
- Honorable Mention, U.S. Nuclear Regulation Commission, 2004

Hobbies and Interests

Table tennis, Tae Kwon Do, Network design, Artificial life, Artificial Intelligence, Computational Biology, Video codecs, Pool

Personal Statement

"I am a rising junior at MIT in Electrical Engineering and Computer Science. Like many others, I hope to eventually change the world. I want to stand at the crossroads of change, be among the first to experience the promised new world. But in the meantime, I just want to work on really cool projects! While I haven't decided what exactly I will be doing with my life, I have developed an interest in machine intelligence, robotics and human-computer interfaces. I have been exposed to robotics for a long time, with my earliest memories dating back to elementary school. In high school I joined FIRST Robotics where I saw many great ideas (and admittedly not so great ides) come to life fueled by teamwork. More recently I participated in a research project involving autonomous vehicles on urban roads."

Fiona Turett

Washington University in Saint Louis
St. Louis, Missouri
Aerospace or Mechanical Engineering
Bachelor of Science, May 2010
Email: turettf@yahoo.com

Robotics Academy Research Project:
Advanced Interface Technology,
Research Associate
Principal Investigator: Corinna Lathan at AnthroTronix

Memberships and Activities

- FIRST Robotics: 2003-2006
  - Drive Team 2005
  - Captain 2006
- Oakland County Competitive Robotics Association: 2002-2005
- Church Youth Group: 2003-2006
- National Honor Society: 2004-2006
- Girl Scouts: 1995-2006

Skills and Certifications

- Computer Skills:
- Language Skills: German, Intermediate French

Honors and Awards

- Oakland County Robotics Women's Competition Winner (3 years)
- 2006 FIRST Robotics National Semi-Finalist
- Mathematics and Science overall excellence award, 2006
- Top Scholar in graduating class
- Michigan Math Prize competition Finalist (10^{th}, 11^{th}, 12^{th} grades)
- National Merit Scholar
- AP Scholar
- Most Valuable Player Award, Oakland County Competitive Robotics Association, 2006
- Departmental Honors in world history, US history, government, French, and German

Hobbies and Interests

Robotics, photography, scrapbooking, music

Personal Statement

"Throughout four years of involvement in FIRST and another local high school robotics league, I have had the opportunity to learn about engineering and realize that I want to pursue it in the future. I have always had a strong interest in space and would love to work in the space industry after college. I will be attending Washington University in St. Louis and hope to major in mechanical or aerospace engineering."

The NASA Robotics Academy is administered and operated within the GSFC Office of Higher Education.

Chief, Office of Higher Education

Dr. Vigdor L. Teplitz

Dr. Teplitz directs the Office of Higher Education and provides vision, inspiration, and leadership for the Academy and other programs offered by the Office. He joined Goddard at the beginning of 2003 on a leave of absence from the Physics Department of Southern Methodist University. His previous experience includes academic appointments at MIT and Virginia Tech, as well as twelve years in the U.S. Arms Control and Disarmament Agency and two years in the White House Science Office. His research is in elementary particle theory, primarily at its border with astrophysics and cosmology.

Deputy Chief, Office of Higher Education

Dr. Richard P. Fahey

Dr. Fahey serves as Deputy Chief of the Office of Higher Education. Prior to Dr. Teplitz's arrival, he led the Office of Higher Education as Acting Director for several years both before and after Jerry Soffen's death. For the past three decades, he has been developing methods of presenting aspects of relativity and quantum theory to specialist and non-specialist audiences. During that time, he has taught courses in physics, astronomy, relativity and cosmology, aerospace engineering, and the philosophy of nature. Dr. Fahey currently conducts research in cosmology and gravitational wave detection at GSFC. He also holds the Naval Space Command Research Chair at the U.S. Naval Academy in Annapolis.

Program Director

Mr. David Rosage

Mr. Rosage has served NASA in various technical roles (ME) between 1980 and 2000, and as Program Manager of the NASA Academy Program since 2000. Besides managing the Academy and Robotics programs for Goddard, he is responsible for short and long-term program improvements, expansion of the Academy and Robotics to all NASA centers, and enabling international participants.

Program Co-Director

Dr. Lubna Rana

Lubna Rana is a Faculty Research Associate and Lecturer in the Physics Department at the University of Maryland, College Park. In addition, she directs the lecture series “Eyes on the Sky,” co-directs the Robotics Academy, and has published several papers on particle theory. Lubna is integral in the Robotics Academy.

Dean of Academic Affairs

Mr. Wence Lopez

Wence López is a professor of Controls, Robotics and Automation at the Polytechnic University of Puerto Rico (PUPR). His background is in Electrical Engineering as well as Mechanical Engineering. He is the Principal Investigator of the "Center of Excellence in Industrial Controls (CEIC)" at PUPR where he performs research in autonomous robots, intelligent systems, artificial vision, voice recognition, obstacle avoidance, and industrial robots.

Operations Manager

Mr. Scott Anderson

Scott has Bachelor of Science degrees in Electrical and Computer Engineering at West Virginia University (WVU). He is currently a pursuing a masters degree in Electrical Engineering, also at WVU. With the experience gained in the automation industry, he is now interested in pursuing a career in robotics.

Logistics Manager

Ms. Amy McDow

Amy started on the engineering path when FIRST Robotics came to her school. She designed the major manipulator mechanisms for FIRST robots her sophomore, junior, and senior years of high school. Because of her experience with FIRST, Amy was accepted into NASA's SHARP (Summer High School Apprenticeship Research Program) the summer of her senior year and participated in the NASA Robotics Academy at Goddard in 2005. She is currently studying Mechanical Engineering at Tennessee Technological University.

Logistics Manager

Ms. Melissa Jensen-Morgan

Melissa is currently pursuing a Bachelor degree in Mechanical Engineering at Oregon State University. She began working with robots as a high school student in the FIRST Robotics Competition and has loved them ever since. In 2005, she was part of the first NASA Robotics Academy, then called the NASA Robotics Internship Program, and was recognized as an Outstanding Participant. Melissa enjoys being back with the program for another summer.

IT and General Support Manager

Mr. Johnny Erickson

Johnny has a B.S. in Computer Science and is the co-founder of a software design company.

Special Assistants for Operations

Mrs. Mary Floyd

Mrs. Floyd provides support for housing, meals, transportation, and lodging on field trips, and distribution of the Robotics Academy participants' financial reimbursements.